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OfficeConnect®
Ethernet Hub 4, 4C, 8, 8C

User Guide (3C16704A, 3C16703A, 3C16700A, 3C16701A)

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INTRODUCTION

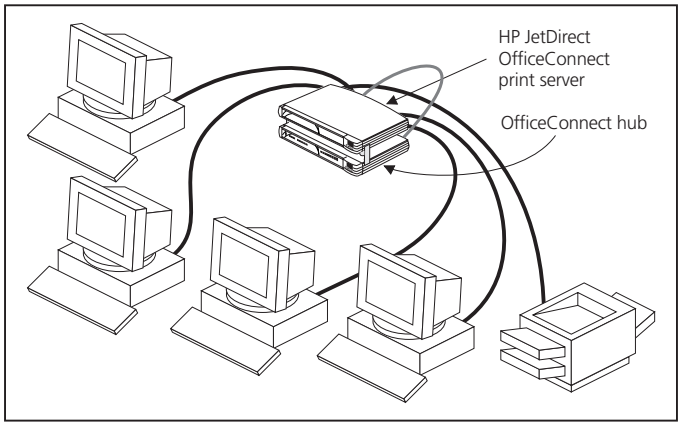
Welcome to the world of networking with 3Com®. In the modern business environment, communication and sharing information is crucial. Computer networks have proved to be one of the fastest modes of communication but, until recently, only large businesses could afford the advantage of networking. The OfficeConnect® product range from 3Com has changed this, bringing networks into the small office.

The OfficeConnect Ethernet Hub 4, OfficeConnect Ethernet Hub 4C, OfficeConnect Ethernet Hub 8 and OfficeConnect Ethernet Hub 8C, are ideal for creating small networks. They are compact and attractively designed for desktop use. These four products are part of the OfficeConnect range which stack neatly together with the OfficeConnect stacking clip.

This user guide describes how to use the OfficeConnect hubs. The hubs have similar features and so this user guide contains general and specific information. When referring to all products, this guide uses the term 'OfficeConnect hub'.

A single OfficeConnect hub allows you to create a small network with up to four or eight workstations, as shown in Figure 1. If you need to connect more workstations, simply use the stacking clip to connect another OfficeConnect hub to form a stack (each hub is a single repeater).

Figure 1 Small Network With OfficeConnect Hub and Optional Print Server



The OfficeConnect hubs have the following ports:

- The Ethernet Hub 4 has four 10BASE-T ports.
- The Ethernet Hub 4C has four 10BASE-T ports, a 10BASE-2 port and an AUI port.
- The Ethernet Hub 8 has eight 10BASE-T ports.
- The Ethernet Hub 8C has eight 10BASE-T ports and a ninth 10BASE-2 port.

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CREATING YOUR NETWORK

What Else Do I Need?

Your OfficeConnect hub comes with:

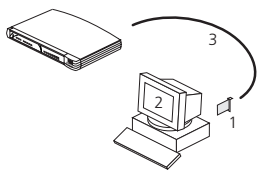
- One power adapter for use with the OfficeConnect hub.
- A Product Registration card for you to fill out and return.
- Four rubber feet.
- A stacking clip.
- Two unit labels and eight cable ties.
- An OfficeConnect Network Assistant CD-ROM.

To connect workstations and additional OfficeConnect hubs to your hub, you need extra equipment. The extra equipment listed in the next section is **not** provided with the hub.

Workstation Connections

To connect workstations and other equipment to your hub, you need:

1 10BASE-T connections for all your equipment. 3Com produce a range of easy to install network adapter cards, which provide your workstations with 10BASE-T connections.



2 An operating system (for example, Netware or Windows 95/98) with network support configured, running on your workstations.

3 One straight-through TP cable for every workstation, as shown in Figure 2.

In order to comply with the 10BASE-T standard, ports designed for workstation connections have been marked with the graphical symbol 'x'. This denotes a crossover in the port's internal wiring, for example 1x, 2x, 3x...

Transceiver Connections

If you want to connect a transceiver to your hub (Hub 4C only), you need:

- An AUI cable. The maximum length you can use is 50m (164ft).
- A 10Mbps Ethernet transceiver for the chosen media type. 3Com produce a range of easy to use transceivers.

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Hub Connections

Depending on what ports your hub has, you can use either 10BASE-T or 10BASE-2 to connect your hubs together:

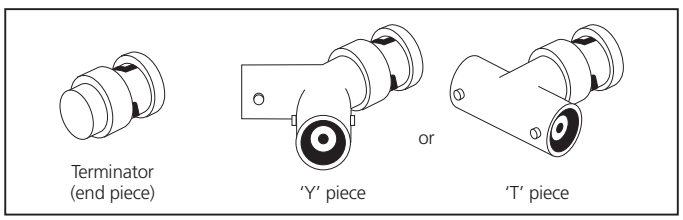
- With 10BASE-2 you can connect up to 30 hubs on a single segment, leaving all of the 10BASE-T ports free.
- With 10BASE-T you can connect up to four hubs in series.

10BASE-2

To connect additional hubs using 10BASE-2 (Hub 4C and 8C only), you need (as shown in Figure 2):

- One 10BASE-2 50 Ohm cable for each additional hub. The minimum cable length you can use is 0.5m (1.6ft). The maximum segment length is 185m (607ft).
- One 10BASE-2 'Y' piece for each hub. You can use 'T' pieces but 'Y' pieces provide optimal clearance of the other ports.
- Two 10BASE-2 50 Ohm terminators (end pieces).

Figure 2 Some of the 10BASE-2 Equipment You May Need



10BASE-T

If you have additional hubs you want to connect using 10BASE-T, you need:

- One straight-through TP cable for each extra hub.

Twisted Pair (TP) Cables

To connect your workstations and hubs, you must use straight-through TP cable with RJ-45 connectors. Cables can be shielded (screened) or unshielded; we recommend that you use shielded. The maximum length you can use is 100m (328ft). A straight-through cable is one where the pins of one connector are connected to the same pins of the other connector.

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Stacking the Units Together

The Rubber Feet

The four self-adhesive rubber feet prevent your hub from moving around on your desk. Only stick the feet to the marked areas at each corner of the underside of your hub if you intend to place the unit directly on top of the desk. Do not fix the feet if you are going to use the clip.

The Stacking Clip

The blue stacking clip allows you to stack your OfficeConnect units together securely.

⚠ ***CAUTION:*** *You can stack up to a maximum of four units. Smaller units must be stacked above larger units.*

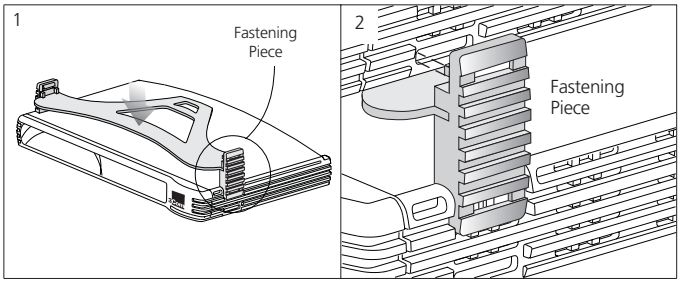
To fit the clip:

1. Place your unit on a flat surface.
2. Fit the clip across the top of the unit, as shown in Figure 3 (picture 1), ensuring that the longer sections of the fastening pieces are pointing downwards.
3. Align the fastening pieces over the slots found on each side of the unit.
4. Push the clip down gently to secure it, ensuring the fastening pieces snap into the slots on the unit.

To fit another unit:

1. Rest the second unit on top of the clip and align it with the front of the unit below.
2. Press down gently on the unit to secure it onto the clip, ensuring the fastening pieces fit into the slots on the unit below, as shown in Figure 3 (picture 2).

Figure 3 Stacking Your Units Together



To remove the clip:

1. Remove the top unit together with the clip. If you hook a finger around one of the the fastening pieces and then pull it gently from out of the slot, the clip should come away with the upper unit attached to it.
2. Push the clip in the center, so it bends towards the base of the unit, and then separate once the clip is loose.

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Positioning Your Hub

When installing your OfficeConnect hub, ensure:

- It is out of direct sunlight and away from sources of heat.
- Cabling is away from power lines, fluorescent lighting fixtures, and sources of electrical noise such as radios, transmitters and broadband amplifiers.
- Water or moisture cannot enter the case of the unit.
- Air flow around the unit and through the vents in the side of the case is not restricted. We recommend you provide a minimum of 25.4mm (1in.) clearance.

Securing Your Hub

There are two slots on the underside of the OfficeConnect hub which can be used for wall mounting. It is recommended that you mount the hubs with the LEDs facing upwards to prevent dust entering the cooling vents.

When wall mounting your hub, ensure that it is within reach of the power outlet.

You need two suitable screws. Ensure that the wall you are going to use is smooth, flat, dry and sturdy. Make two screw holes which are 150mm (5.9in.) apart. Use the template at the back of this guide to mark the position of the holes. Fix the screws into the wall, leaving their heads 3mm (0.12in.) clear of the wall surface.

Remove any connections to the hub and locate it over the screw heads. When in line, gently push the hub on to the wall and move it downwards to secure. When making connections, be careful not to push the hub up and off the wall.

CAUTION: *Only wall mount single hubs, do not wall mount stacked hubs.*

Also available from 3Com, is the OfficeConnect Mounting Unit (part number 3C16765). This allows you to firmly secure a stack of OfficeConnect devices to the desktop or onto a shelf in a rack.

Using Your Hub

You are now ready to create your network, using your OfficeConnect hub.

Read pages 10–16 if you have an:

- OfficeConnect Ethernet Hub 4 or Hub 4C

Read pages 17–23 if you have an:

- OfficeConnect Ethernet Hub 8 or 8C

When you have connected your equipment, you are ready to use your network. If you suspect there is a problem, refer to (depending on your hub):

- "Problem Solving for the Hub 4 and 4C" on page 15
- "Problem Solving for the Hub 8 and 8C" on page 22

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THE OFFICECONNECT ETHERNET HUB 4 AND 4C

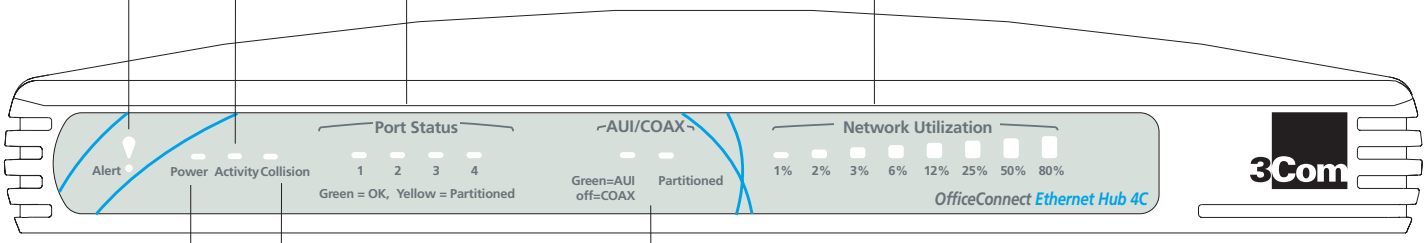
Ethernet Hub 4 and 4C—Front

Alert LED
orange
Alerts you to excessive network use or an isolated (partitioned) 10BASE-T port.

Activity LED (Hub 4 only)
yellow
Flashes each time a packet is received on a port.

10BASE-T Port Status LEDs
green/yellow
Indicates the status of each 10BASE-T port.
green — The link between the port and the next piece of network equipment is OK.
yellow — The port has partitioned due to a fault on that segment.
off — Nothing is connected to the port or the link has failed.

Network Utilization LEDs (Hub 4C only)
green/yellow/orange
Indicates how much your network is being used.



Power LED
green
Indicates that the hub is powered on.

Collision LED
yellow
Flashes each time a collision is detected on the network. Collisions are part of normal network operation.

AUI/COAX Status LEDs (Hub 4C only)
green/off=media, yellow=partition
Indicates the status of the AUI or 10BASE-2 port, depending on which one is in use.
green/off — The left-hand status LED is green if the AUI port is in use, and off if either the 10BASE-2 port is being used or nothing is connected to the port.
yellow — If the right-hand status LED is yellow, the port in use has been partitioned.

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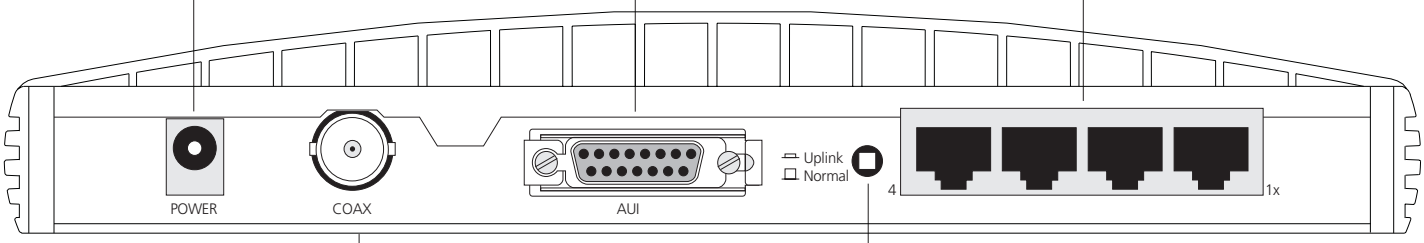
Ethernet Hub 4 and 4C—Rear

Power Adapter socket
Only use the power adapter that is supplied with this OfficeConnect hub. Do not use any other adapter.

AUI port (Hub 4C only)
Allows 10Mbps transceivers of different media types to be connected to the hub. Connecting a transceiver automatically disables the 10BASE-2 port.

Four 10BASE-T RJ-45 ports
Use 10BASE-T cable with RJ-45 connectors. You can connect the OfficeConnect hub to any workstation or piece of equipment that has a 10BASE-T port. Refer to "Connecting Hubs Using 10BASE-T" on page 14.



10BASE-2 port (Hub 4C only)
Can be used to connect your hub to other OfficeConnect hubs and equipment with 10BASE-2 cabling.
If used, it is effectively a fifth port. Refer to "Connecting Hubs Using 10BASE-2" on page 13.

Uplink/Normal switch
Affects the operation of port 4. For correct usage, refer to "Connecting Hubs Using 10BASE-T" on page 14.

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Connecting Workstations and Other Equipment to Your Hub

WARNING: *Please read the 'Important Safety Information' section before you start.*

WARNHINWEIS: *Bitte lesen Sie den Abschnitt 'Wichtige Sicherheitsinformationen' sorgfältig durch, bevor Sie das Gerät einschalten.*

AVERTISSEMENT: *Veuillez lire attentivement la section "Consignes importantes de sécurité" avant de mettre en route.*

CAUTION: *Do not power the hub off and on quickly. Wait about five seconds between power cycles.*

Connect workstations and other equipment to any of the hub's 10BASE-T RJ-45 ports using 10BASE-T cables.

To connect a 10BASE-T cable, simply slot the connector into the relevant RJ-45 port. When the connector is fully in, its latch locks it into place. To disconnect the cable, push the connector's latch in and remove it.

If you are using port 4 to connect to a workstation using a straight-through TP cable, ensure the Uplink/Normal switch is set to Normal (out).

The hub detects all port connections, so you can start using your network immediately. When you need more ports, simply add more OfficeConnect hubs.

Connecting Transceivers to the AUI Port

You can connect a 10Mbps Ethernet transceiver to your hub (Hub 4C only), using a standard AUI cable. Connect one end of the cable to the transceiver and the other end to the AUI port on the hub's rear panel. This automatically disables the 10BASE-2 port, and activates the AUI/COAX LED to show the external transceiver is in use. Engage the slide locks at both ends of the AUI cable.

Connecting OfficeConnect Ethernet Hubs Together

You can increase the number of workstations that can connect to your network by adding more OfficeConnect hubs. You can use either 10BASE-T or 10BASE-2 (Hub 4C only) to do this.

Do not connect the same two hubs together using both 10BASE-T and 10BASE-2. This causes a network loop.

If you do not use the 10BASE-2 port, you do not need to connect a terminator (end piece) to it. If the AUI port is not used and a terminator is not connected to the 10BASE-2 port, the port partitions and the Coax Status LED lights yellow. This is correct operation.

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Connecting Hubs Using 10BASE-2

Connect a 10BASE-2 'Y' piece to each of your hubs (Hub 4C only). Connect the 'Y' pieces with 10BASE-2 cable to form a single segment, as shown in Figure 4. Remember to terminate the two free ends of the segment by fitting terminators (end pieces).

To disconnect a 10BASE-2 cable, twist each connector counter-clockwise to unlock it, and remove it.

If you have connected a 10Mbps Ethernet transceiver to the AUI port, the 10BASE-2 port will be disabled. You can use this transceiver to connect your hubs but we recommend that you connect your hubs using 10BASE-T cable (refer to the next section).

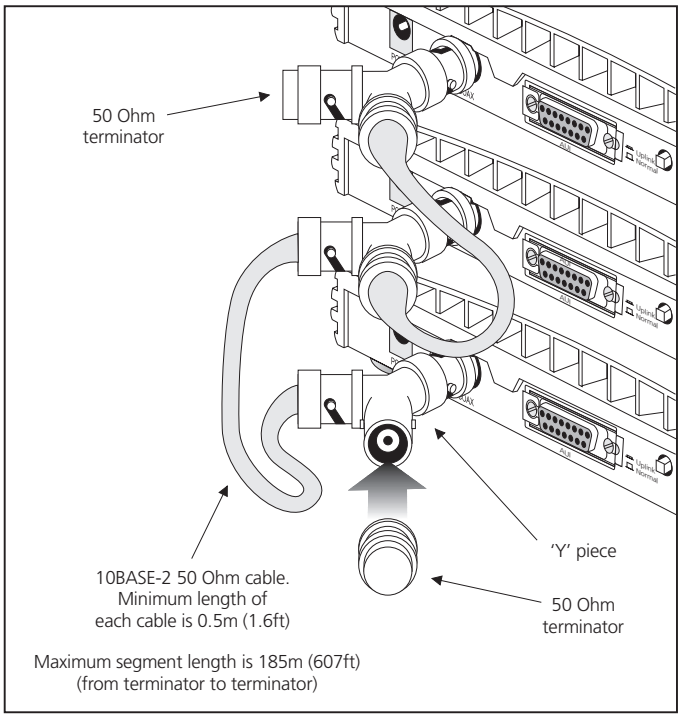
When using 10BASE-2 cable, it is important that both ends of the segment are properly terminated with 50 Ohm terminators (end pieces).

Only use 50 Ohm 10BASE-2 cables and a 'Y' piece for each hub. You can use 'T' pieces but 'Y' pieces provide optimum clearance of the other ports.

Checking Connections

When you have connected your hubs, power them on. The Port Status LEDs for the 10BASE-2 ports you have used should be off. If they are not, check your connections.

Figure 4 Correct Hub Connections Using 10BASE-2



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Connecting Hubs Using 10BASE-T

You can connect hubs together with 10BASE-T in a number of ways, but for simplicity we recommend the following method, as shown in Figure 5:

1 Starting from the bottom, connect the port 4 of the lower hub to port 3 of the hub immediately above. Repeat this for each hub.

2 Set all Uplink/Normal switches to Uplink (in) except for the top hub (the one with port 4 not connected to another hub). This unused port can be connected to a workstation provided that the Uplink/Normal switch is set to Normal (out).

Checking Connections

When you have connected your hubs, power them on. The Port Status LEDs for the 10BASE-T ports you have used should be green. If they are not, check your connections. If the 10BASE-2 port is not used and is not terminated and the AUI port is not being used (if applicable), the LED should be yellow showing that it has partitioned. This is correct operation.

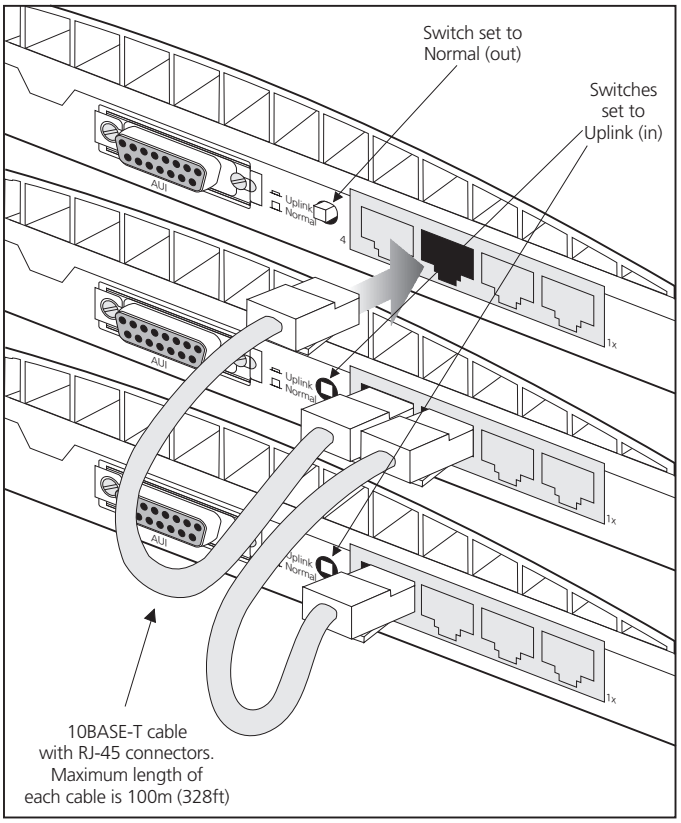
Spot Checks

At frequent intervals, visually check that:

- The Alert LED is not lit — this is the best way to find out if there are problems with your network
- Case vents are not obstructed
- Cabling is secure and not pulled taut

If you suspect there is a problem, refer to "Problem Solving for the Hub 4 and 4C" on page 15.

Figure 5 Correct Hub Connections Using 10BASE-T



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PROBLEM SOLVING FOR THE HUB 4 AND 4C

The OfficeConnect hub has been designed to aid you when detecting and solving possible problems with your network. These problems are rarely serious, the cause is usually a disconnected or damaged cable, or incorrect configuration. If this section does not solve your problem, contact your supplier for information on what to do next.

Perform these actions first:

- Ensure all equipment is powered on.
- Power off the hubs, wait about 5 seconds and then power on the hubs.

Check the following symptoms and solutions:

Power LED not lit. Check your power adapter connection. If there is still no power, you may have a faulty power adapter which needs replacing with another OfficeConnect power adapter. **Do not use any other power adapter with the hub.**

Alert LED continuously lit. There is either continual excessive use of your network (over 80%) or, more likely, a 10BASE-T port has partitioned due to a loop in your network (in which case the corresponding Port Status LED will be yellow). Examine your connections and remove the loop. Each piece of equipment needs only one connection to your OfficeConnect hub.

Port Status LED yellow for a 10BASE-T port. It is likely that there is a loop in your network which has caused this port to partition. Examine your connections and remove the loop. Each piece of equipment needs only one connection to your OfficeConnect hub. The LED will change from yellow to green, on receiving a valid packet on the port.

Link between two OfficeConnect hubs not working. Check your hub connections; follow the information given for your hub. With 10BASE-T it is likely an Uplink/Normal switch is incorrectly set. With 10BASE-2 it is likely a terminator (end piece) is not properly fitted; this would cause the Coax Port Status LED to light yellow (partition).

AUI/COAX Port Status LED not lit when external transceiver in use. Check the AUI cable is correctly connected to the hub and to the external transceiver. Ensure both slide locks are engaged.

AUI/COAX Port Status LED yellow when the 10BASE-2 port is not being used. The port has partitioned. This is correct operation.

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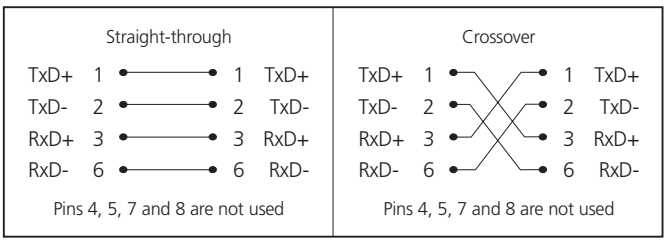
Port Status LED not lit for a 10BASE-T port that has a connection. There is a problem with this connection. Check that you are using a straight-through 10BASE-T cable which is properly connected at both ends, and is not damaged. If the cable is connected to port 4, ensure that the Uplink/Normal switch is set to Normal (out). Also check that the equipment being connected to the hub is powered on and operating correctly. Refer to Figure 6 below to compare the wiring of a straight-through and a crossover cable.

Figure 6 Straight-through Cable/Crossover Cable


Straight-through
TxD+ 1 1 TxD+
TxD- 2 2 TxD-
RxD+ 3 3 RxD+
RxD- 6 6 RxD-
Pins 4, 5, 7 and 8 are not used
Crossover
TxD+ 1 1 TxD+
TxD- 2 2 TxD-
RxD+ 3 3 RxD+
RxD- 6 6 RxD-
Pins 4, 5, 7 and 8 are not used

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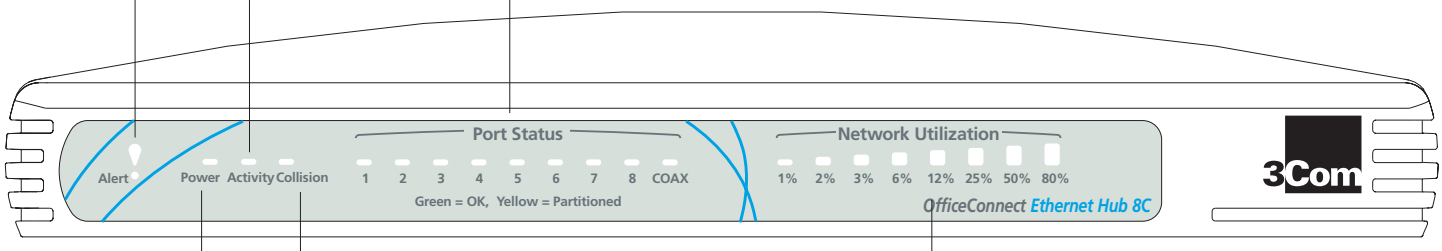
THE OFFICECONNECT ETHERNET HUB 8 AND 8C

Ethernet Hub 8 and 8C—Front

Alert LED
orange
Alerts you to excessive network use or an isolated (partitioned) 10BASE-T port.

Activity LED (Hub 8 only)
yellow
Flashes each time a packet is received on a port.

Port Status LEDs
green/yellow
Indicates the status of each port.
green — The link between the port and the next piece of network equipment is OK.
yellow — The port has partitioned due to a fault on that segment.
off — Nothing is connected to the port or the link has failed.
The 10BASE-2 port LED (Hub 8C only) can only be yellow or off. It is yellow if the port has partitioned.



Power LED
green
Indicates that the hub is powered on.

Collision LED
yellow
Flashes each time a collision is detected on the network. Collisions are part of normal network operation.

Network Utilization LEDs (Hub 8C only)
green/yellow/orange
Indicates how much your network is being used.

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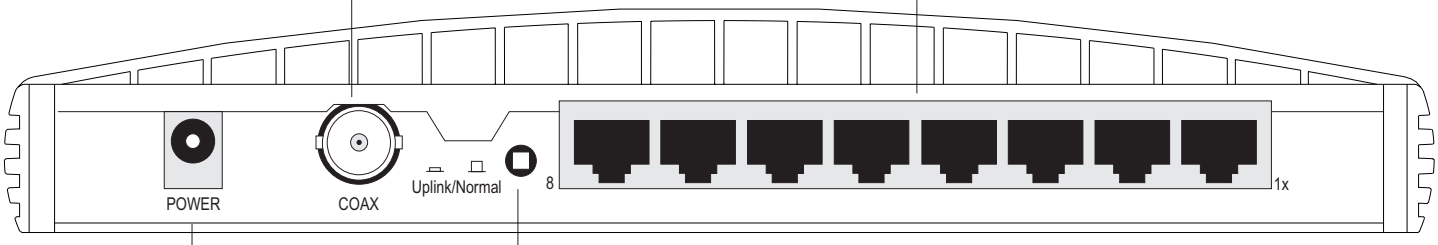
Ethernet Hub 8 and 8C—Rear

10BASE-2 port (Hub 8C only)
Can be used to connect your hub to other OfficeConnect hubs and equipment with 10BASE-2 cabling.
If used, it is effectively a ninth port.
Refer to "Connecting Hubs Using 10BASE-2" on page 20.

Eight 10BASE-T RJ-45 ports
Use 10BASE-T cable with RJ-45 connectors. You can connect the OfficeConnect hub to any workstation or piece of equipment that has a 10BASE-T port. Port 8 can be used to link to another OfficeConnect hub. Refer to "Connecting Hubs Using 10BASE-T" on page 21.



Power Adapter socket
Only use the power adapter that is supplied with this OfficeConnect hub. Do not use any other adapter.

Uplink/Normal switch
Affects the operation of port 8. For correct usage, refer to "Connecting Hubs Using 10BASE-T" on page 21.

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Connecting Workstations and Other Equipment to Your Hub

WARNING: *Please read the 'Important Safety Information' section before you start.*

WARNHINWEIS: *Bitte lesen Sie den Abschnitt 'Wichtige Sicherheitsinformationen' sorgfältig durch, bevor Sie das Gerät einschalten.*

AVERTISSEMENT: *Veuillez lire attentivement la section "Consignes importantes de sécurité" avant de mettre en route.*

CAUTION: *Do not power the hub off and on quickly. Wait about five seconds between power cycles.*

Connect workstations and other equipment to any of the hub's 10BASE-T RJ-45 ports using 10BASE-T cables.

To connect a 10BASE-T cable, simply slot the connector into the relevant RJ-45 port. When the connector is fully in, its latch locks it into place. To disconnect the cable, push the connector's latch in and remove it.

If you are using port 8 to connect to a workstation using a straight-through TP cable, ensure the Uplink/Normal switch is set to Normal (out).

The hub detects all port connections, so you can start using your network immediately. When you need more ports, simply add more OfficeConnect hubs.

Connecting OfficeConnect Ethernet Hubs Together

You can increase the number of workstations that can connect to your network by adding more OfficeConnect hubs. You can use either 10BASE-T or 10BASE-2 (Hub 8C only) to do this.

Do not connect the same two hubs together using both 10BASE-T and 10BASE-2. This causes a network loop.

If you do not use the 10BASE-2 port, you do not need to connect a terminator (end piece) to it. If a terminator is not used, the port partitions and the 10BASE-2 Port Status LED lights yellow. This is correct operation.

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Connecting Hubs Using 10BASE-2

Connect a 10BASE-2 'Y' piece to each of your hubs (Hub 8C only). Connect the 'Y' pieces with 10BASE-2 cable to form a single segment, as shown in Figure 7. Remember to terminate the two free ends of the segment by fitting terminators (end pieces).

To disconnect a 10BASE-2 cable, twist each connector counter-clockwise to unlock it, and remove it.

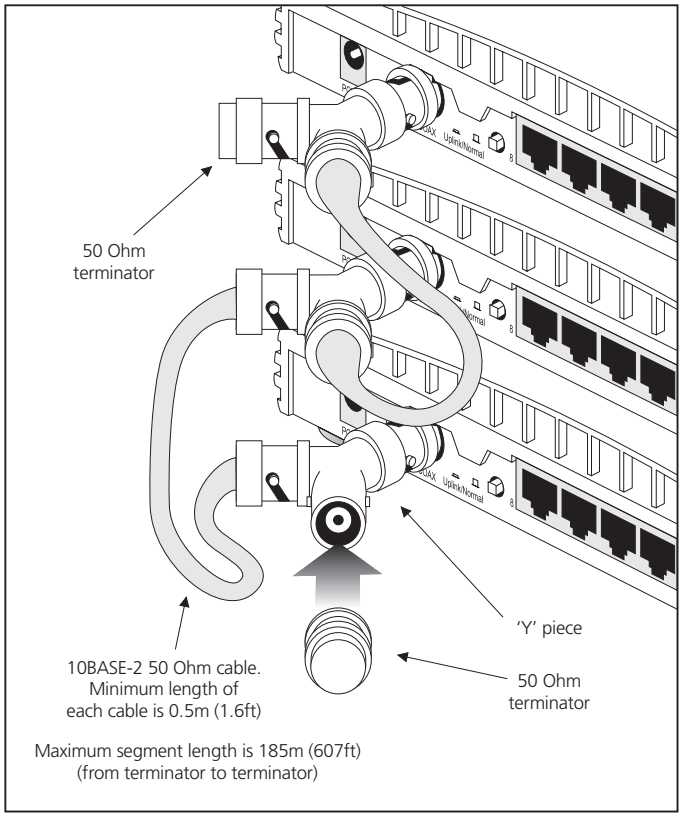
When using 10BASE-2 cable, it is important that both ends of the segment are properly terminated with 50 Ohm terminators (end pieces).

Only use 50 Ohm 10BASE-2 cables and a 'Y' piece for each hub. You can use 'T' pieces but 'Y' pieces provide optimum clearance of the other ports.

Checking Connections

When you have connected your hubs, power them on. The Port Status LEDs for the 10BASE-2 ports you have used should be off. If they are not, check your connections.

Figure 7 Correct Hub Connections Using 10BASE-2



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Connecting Hubs Using 10BASE-T

You can connect hubs together with 10BASE-T in a number of ways, but for simplicity we recommend the following method, as shown in Figure 8:

1 Starting from the bottom, connect the port 8 of the lower hub to port 7 of the hub immediately above. Repeat this for each hub.

2 Set all Uplink/Normal switches to Uplink (in) except for the top hub (the one with port 8 not connected to another hub). This unused port can be connected to a workstation provided that the Uplink/Normal switch is set to Normal (out).

Checking Connections

When you have connected your hubs, power them on. The Port Status LEDs for the 10BASE-T ports you have used should be green. If they are not, check your connections. If the 10BASE-2 port is not used and is not terminated, the LED should be yellow showing that it has partitioned. This is correct operation.

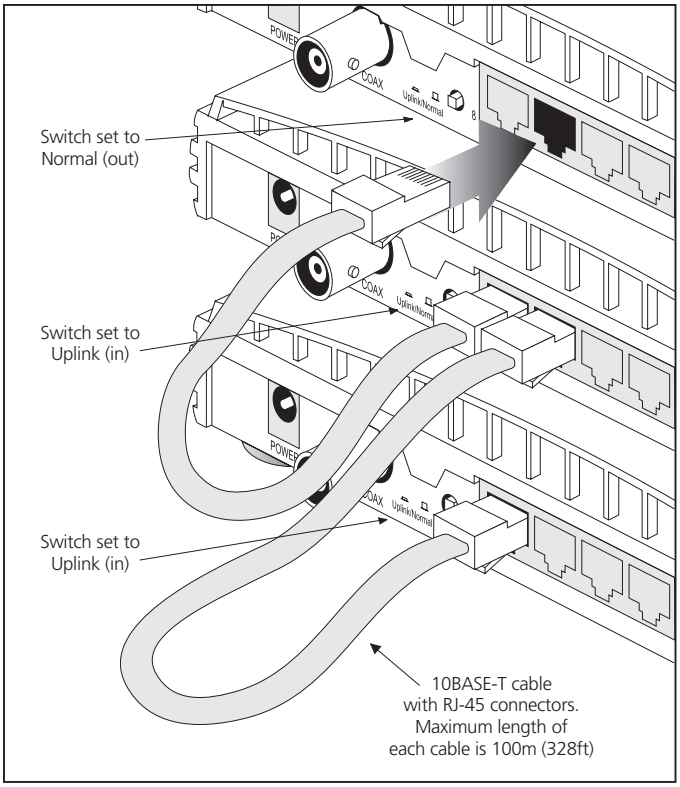
Spot Checks

At frequent intervals, visually check that:

- The Alert LED is not lit — this is the best way to find out if there are problems with your network.
- Case vents are not obstructed.
- Cabling is secure and not pulled taut.

If you suspect there is a problem, refer to "Problem Solving for the Hub 8 and 8C" on page 22.

Figure 8 Correct Hub Connections Using 10BASE-T



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PROBLEM SOLVING FOR THE HUB 8 AND 8C

The OfficeConnect hub has been designed to aid you when detecting and solving possible problems with your network. These problems are rarely serious, the cause is usually a disconnected or damaged cable, or incorrect configuration. If this section does not solve your problem, contact your supplier for information on what to do next.

Perform these actions first:

- Ensure all equipment is powered on.
- Power off the hubs, wait about 5 seconds and then power on the hubs.

Check the following symptoms and solutions:

Power LED not lit. Check your power adapter connection. If there is still no power, you may have a faulty power adapter which needs replacing with another OfficeConnect power adapter. **Do not use any other power adapter with the hub.**

Alert LED continuously lit. There is either continual excessive use of your network (over 80%) or, more likely, a 10BASE-T port has partitioned due to a loop in your network (in which case the corresponding Port Status LED will be yellow). Examine your connections and remove the loop. Each piece of equipment needs only one connection to your OfficeConnect hub.

Port Status LED yellow for a 10BASE-T port. It is likely that there is a loop in your network which has caused this port to partition. Examine your connections and remove the loop. Each piece of equipment needs only one connection to your OfficeConnect hub. The LED will change from yellow to green, on receiving a valid packet on the port.

Port Status LED yellow for the 10BASE-2 port when the 10BASE-2 port is not being used. The port has partitioned. This is correct operation.

Link between two OfficeConnect hubs not working. Check your hub connections; follow the information given for your hub. With 10BASE-T it is likely an Uplink/Normal switch is incorrectly set. With 10BASE-2 it is likely a terminator (end piece) is not properly fitted; this would cause the 10BASE-2 Port Status LED to light yellow (partition).

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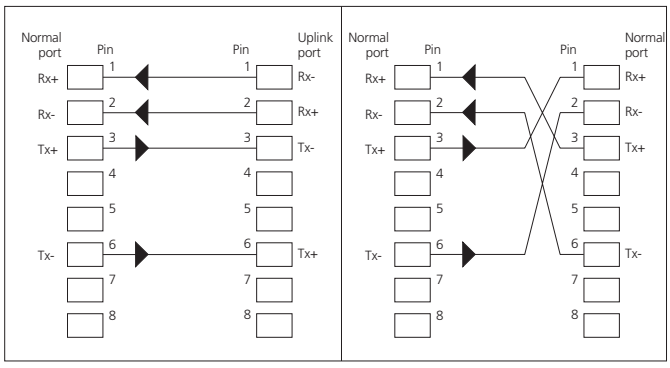
Port Status LED not lit for a 10BASE-T port that has a connection. There is a problem with this connection. Check that you are using a straight-through 10BASE-T cable which is properly connected at both ends, and is not damaged. If the cable is connected to port 8, ensure that the Uplink/Normal switch is set to Normal (out). Also check that the equipment being connected to the hub is powered on and operating correctly. Refer to Figure 9 below to compare the wiring of a straight-through and a crossover cable.

Figure 9 Straight-through Cable/Crossover Cable



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NETWORKING TERMINOLOGY

A **Network** is a collection of workstations (for example, IBM-compatible personal computers) and other equipment (for example, printers), connected for the purpose of exchanging information. Networks vary in size, some are within a single room, others span continents.

A **Local Area Network (LAN)** is a network, usually in an office, that spans no more than a single site.

Ethernet is a type of LAN, referring to the technology used to pass information around the network.

10BASE-T is the name given to the Ethernet protocol that runs over **Twisted Pair (TP)** cable at 10Mbps. The OfficeConnect hub uses **RJ-45** type connectors for connecting your TP network.

10BASE-2 is the name given to the Ethernet protocol that runs over 50 Ohm **Coaxial** cable.

A **Network Loop** occurs when two pieces of network equipment are connected by more than one path. Your hub detects this and **partitions** (isolates) one of its ports to break the loop.

A **segment** is the length of Ethernet cable connected to a port, whether this cable is 10BASE-T, 10BASE-2, or other type. When you join equipment together with 10BASE-2 cable, via single speed hubs, the entire cable forms a single segment.

Packets are the units of information your workstations and other equipment send to each other over the network.

Collisions are a part of normal Ethernet operation and occur if two or more devices (pieces of network equipment) attempt to transmit at the same time. A sudden sustained increase in the number of collisions can indicate a problem with a device, particularly if it is not accompanied by a general increase in traffic. On coaxial segments an increase in collisions can also indicate faulty cabling.

An **AUI (Attachment Unit Interface)** port is a standard type of port used to connect 10Mbps Ethernet transceivers to network equipment (Hub 8C only).

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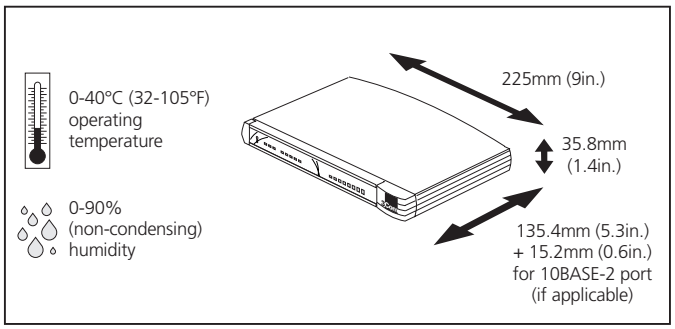
DIMENSIONS AND STANDARDS

Dimensions and Operating Conditions



	Power	Weight
OfficeConnect Ethernet Hub 4	4 VA, 14 BThU/hr	500g (1.1 lb)
OfficeConnect Ethernet Hub 4C	12 VA, 40 BThU/hr	550g (1.2 lb)
OfficeConnect Ethernet Hub 8	11 VA, 38 BThU/hr	500g (1.1 lb)
OfficeConnect Ethernet Hub 8C	12 VA, 40 BThU/hr	550g (1.2 lb)

Standards

Functional:	ISO 8802/3 IEEE 802.3
Safety:	UL 1950, EN 60950 CSA 22.2 #950 IEC 950
EMC:	EN 55022 Class B† EN 50082-1 FCC Part 15 Class B†* ICES-003 Class B VCCI Class B† CNS 13438 Class A
Environmental:	EN 60068 (IEC 68)

†Category 5 screened cables must be used to ensure compliance with the Class B requirements of this standard. The use of unscreened cables (category 3 or category 5) complies with the Class A requirements.

*Refer to "Electromagnetic Compatibility" on page 38 for conditions of operation.†

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ENVIRONMENTAL STATEMENTS

It is the policy of 3Com Corporation to be environmentally-friendly in all operations. To uphold our policy, we are committed to:

- Establishing environmental performance standards that comply with national legislation and regulations.
- Conserving energy, materials and natural resources in all operations.
- Reducing the waste generated by all operations.
- Ensuring that all waste conforms to recognized environmental standards.
- Maximizing the recyclable and reusable content of all products.
- Ensuring that all products can be recycled, reused and disposed of safely.
- Ensuring that all products are labelled according to recognized environmental standards.
- Improving our environmental record on a continual basis.

End Of Life Statement

3Com processes allow for the recovery, reclamation and safe disposal of all end-of-life electronic components.

Regulated Materials Statement

3Com products do not contain any hazardous or ozone-depleting material.

Environmental Statement about the Documentation

The documentation for this product is printed on paper that comes from sustainable, managed forests; it is fully biodegradable and recyclable, and is completely chlorine-free. The varnish is environmentally-friendly, and the inks are vegetable-based with a low heavy-metal content.

Environmental Statement about the Product Packaging

The packaging for this product is fully recyclable. It has a recycled (post consumer) waste content of at least 40% by weight, and no heavy-metal content.

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IMPORTANT SAFETY INFORMATION

WARNING: *Warnings contain directions that you must follow for your personal safety. Follow all directions carefully.*
You must read the following safety information carefully before you install or remove the unit:

- Exceptional care must be taken during installation and removal of the unit.
- Only stack the OfficeConnect hub with other OfficeConnect units.
- To ensure compliance with international safety standards, only use the power adapter that is supplied with the unit.
- The socket outlet must be near to the unit and easily accessible. You can only remove power from the unit by disconnecting the power cord from the outlet.
- This unit operates under SELV (Safety Extra Low Voltage) conditions according to IEC 950. The conditions are only maintained if the equipment to which it is connected also operates under SELV conditions.
- There are no user-replaceable fuses or user-serviceable parts inside the hub. If you have a physical problem with the unit that cannot be solved with problem solving actions in this guide, contact your supplier.
- Disconnect the power adapter before moving the unit.

WARNING: RJ-45 ports. *These are shielded RJ-45 data sockets. They cannot be used as telephone sockets. Only connect RJ-45 data connectors to these sockets.*

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WICHTIGE SICHERHEITSHINWEISE

WARNHINWEIS: *Warnhinweise enthalten Anweisungen, die Sie zu Ihrer eigenen Sicherheit befolgen müssen. Alle Anweisungen sind sorgfältig zu befolgen.*
Sie müssen die folgenden Sicherheitsinformationen sorgfältig durchlesen, bevor Sie das Geräts installieren oder ausbauen:

- Bei der Installation und beim Ausbau des Geräts ist mit höchster Vorsicht vorzugehen.
- Stapeln Sie das Geräts nur mit anderen OfficeConnect Gerätes zusammen.
- Aufgrund von internationalen Sicherheitsnormen darf das Gerät nur mit dem mitgelieferten Netzadapter verwendet werden.
- Die Netzsteckdose muß in der Nähe des Geräts und leicht zugänglich sein. Die Stromversorgung des Geräts kann nur durch Herausziehen des Gerätenetzkabels aus der Netzsteckdose unterbrochen werden.
- Der Betrieb dieses Geräts erfolgt unter den SELV-Bedingungen (Sicherheitskleinstspannung) gemäß IEC 950. Diese Bedingungen sind nur gegeben, wenn auch die an das Gerät angeschlossenen Geräte unter SELV-Bedingungen betrieben werden.
- Es sind keine von dem Benutzer zu ersetzende oder zu wartende Teile in dem Gerät vorhanden. Wenn Sie ein Problem mit dem Switch haben, das nicht mittels der Fehleranalyse in dieser Anleitung behoben werden kann, setzen Sie sich mit Ihrem Lieferanten in Verbindung.
- Vor dem Ausbau des Geräts das Netzadapterkabel herausziehen.

WARNHINWEIS: RJ-45-Anschlüsse. *Dies sind abgeschirmte RJ-45-Datenbuchsen. Sie können nicht als Telefonanschlußbuchsen verwendet werden. An diesen Buchsen dürfen nur RJ-45-Datenstecker angeschlossen werden.*

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CONSIGNES IMPORTANTES DE SÉCURITÉ

AVERTISSEMENT: *Les avertissements présentent des consignes que vous devez respecter pour garantir votre sécurité personnelle. Vous devez respecter attentivement toutes les consignes.*
Nous vous demandons de lire attentivement les consignes suivantes de sécurité avant d'installer ou de retirer l'appareil:

- Faites très attention lors de l'installation et de la dépose du groupe.
- Seulement entasser le moyer avec les autres moyeux OfficeConnects.
- Pour garantir le respect des normes internationales de sécurité, utilisez uniquement l'adaptateur électrique remis avec cet appareil.
- La prise secteur doit se trouver à proximité de l'appareil et son accès doit être facile. Vous ne pouvez mettre l'appareil hors circuit qu'en débranchant son cordon électrique au niveau de cette prise.
- L'appareil fonctionne à une tension extrêmement basse de sécurité qui est conforme à la norme CEI 950. Ces conditions ne sont maintenues que si l'équipement auquel il est raccordé fonctionne dans les mêmes conditions.
- Il n'y a pas de parties remplaceables par les utilisateurs ou entretenues par les utilisateurs à l'intérieur du moyeu. Si vous avez un problème physique avec le moyeu qui ne peut pas être résolu avec les actions de la résolution des problèmes dans ce guide, contacter votre fournisseur.
- Débranchez l'adaptateur électrique avant de retirer cet appareil.

AVERTISSEMENT: Ports RJ-45. *Il s'agit de prises femelles blindées de données RJ-45. Vous ne pouvez pas les utiliser comme prise de téléphone. Branchez uniquement des connecteurs de données RJ-45 sur ces prises femelles.*

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TECHNICAL SUPPORT

3Com provides easy access to technical support information through a variety of services. This section describes these services.

Information contained in this section is correct at time of publication. For the most recent information, 3Com recommends that you access the 3Com Corporation World Wide Web site.

Online Technical Services

3Com offers worldwide product support 24 hours a day, 7 days a week, through the following online systems:

- World Wide Web site.
- 3Com Knowledgebase Web Services.

World Wide Web Site

To access the latest networking information on the 3Com Corporation World Wide Web site, enter this URL into your Internet browser:

http://www.3com.com/

This service provides access to online support information such as technical documentation and software, as well as support options that range from technical education to maintenance and professional services.

3Com Knowledgebase Web Services

This interactive tool contains technical product information compiled by 3Com expert technical engineers around the globe. Located on the World Wide Web at:

http://knowledgebase.3com.com.

This service gives all 3Com customers and partners complementary, round-the-clock access to technical information on most 3Com products.

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Support from Your Network Supplier

If you require additional assistance, contact your network supplier. Many suppliers are authorized 3Com service partners who are qualified to provide a variety of services, including network planning, installation, hardware maintenance, application training, and support services.

When you contact your network supplier for assistance, have the following information ready:

- Product model name, part number, and serial number.
- A list of system hardware and software, including revision levels.
- Diagnostic error messages.
- Details about recent configuration changes, if applicable.

If you are unable to contact your network supplier, see the following section on how to contact 3Com.

Support from 3Com

If you are unable to obtain assistance from the 3Com online technical resources or from your network supplier, 3Com offers technical telephone support services. To find out more about your support options, call the 3Com technical telephone support phone number at the location nearest you.

When you contact 3Com for assistance, have the following information ready:

- Product model name, part number, and serial number.
- A list of system hardware and software, including revision levels.
- Diagnostic error messages.
- Details about recent configuration changes, if applicable.

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Here is a list of worldwide technical telephone support numbers:

Country	Telephone Number	Country	Telephone Number
Asia, Pacific Rim			
Australia	1 800 678 515	P.R. of China	10800 61 00137 or
Hong Kong	800 933 486		021 6350 1590
India	+61 2 9937 5085	Singapore	800 6161 463
Indonesia	001 800 61 009	S. Korea	
Japan	0031 61 6439	From anywhere in S. Korea:	00798 611 2230
Malaysia	1800 801 777	From Seoul:	(0)2 3455 6455
New Zealand	0800 446 398	Taiwan, R.O.C.	0080 611 261
Pakistan	+61 2 9937 5085	Thailand	001 800 611 2000
Philippines	1235 61 266 2602		
Europe			
From anywhere in Europe, call:	+31 (0)30 6029900 phone +31 (0)30 6029999 fax		
Europe, South Africa, and Middle East			
From the following countries, you may use the toll-free numbers:			
Austria	0800 297468	Netherlands	0800 0227788
Belgium	0800 71429	Norway	800 11376
Denmark	800 17309	Poland	00800 3111206
Finland	0800 113153	Portugal	0800 831416
France	0800 917959	South Africa	0800 995014
Germany	0800 1821502	Spain	900 983125
Hungary	00800 12813	Sweden	020 795482
Ireland	1800 553117	Switzerland	0800 55 3072
Israel	1800 9453794	U.K.	0800 966197
Italy	1678 79489		

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Country	Telephone Number	Country	Telephone Number
Latin America			
Argentina	AT&T +800 666 5065	Mexico	01 800 CARE (01 800
Brazil	0800 13 3266	Peru	2273)
Chile	1230 020 0645	Puerto Rico	AT&T +800 666 5065
Colombia	98012 2127	Venezuela	800 666 5065
			AT&T +800 666 5065
North America	1 800 876-3266		

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Returning Products for Repair

Before you send a product directly to 3Com for repair, you must first obtain a Return Material Authorization (RMA) number. Products sent to 3Com without authorization numbers will be returned to the sender unopened, at the sender's expense.

To obtain an authorization number, call or fax:

Country	Telephone Number	Fax Number
Asia, Pacific Rim	+ 65 543 6500	+ 65 543 6348
Europe, South Africa, and Middle East	+ 31 30 6029900	+ 31 30 6029999
Latin America	1 408 326 2927	1 408 326 3355
From the following countries, you may call the toll-free numbers; select option 2 and then option 2:		
Austria	0800 297468	
Belgium	0800 71429	
Denmark	800 17309	
Finland	0800 113153	
France	0800 917959	
Germany	0800 1821502	
Hungary	00800 12813	
Ireland	1800553117	
Israel	1800 9453794	
Italy	1678 79489	
Netherlands	0800 0227788	
Norway	800 11376	
Poland	00800 3111206	
Portugal	0800 831416	
South Africa	0800 995014	
Spain	900 983125	
Sweden	020 795482	
Switzerland	0800 55 3072	
U.K.	0800 966197	
U.S.A. and Canada	1 800 876 3266	1 408 326 7120 (not toll-free)

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3Com Corporation Limited Warranty

3Com OfficeConnect Ethernet Hub 4, 4C, 8, 8C

The duration of the warranty for the OfficeConnect Ethernet Hub 4, 4C, 8, 8C (3C16704A, 3C16703A, 3C16700A, 3C16701A) is lifetime, including the power adapter.

Advance hardware exchange is available during the first year from your date of purchase in accordance with 3Com's standard terms and conditions for such service. After the first year the warranty reverts to 3Com's standard lifetime limited warranty.

To qualify for the lifetime limited warranty and the advance hardware exchange you must submit the appropriate product warranty registration card to 3Com, otherwise this product will be warranted for a period of one (1) year without advance hardware exchange.

HARDWARE

3Com warrants this hardware product to be free from defects in workmanship and materials, under normal use and service, for the following length of time from the date of purchase from 3Com or its authorized reseller:

One (1) year (unless otherwise specified above)

3Com's sole obligation under this express warranty shall be, at 3Com's option and expense, to repair the defective product or part, deliver to Customer an equivalent product or part to replace the defective item, or if neither of the two foregoing options is reasonably available, 3Com may, in its sole discretion, refund to Customer the purchase price paid for the defective product. All products that are replaced will become the property of 3Com. Replacement products may be new or reconditioned. 3Com warrants any replaced or repaired product or part for ninety (90) days from shipment, or the remainder of the initial warranty period, whichever is longer.

SOFTWARE

3Com warrants that each software program licensed from it will perform in substantial conformance to its program specifications, for a period of ninety (90) days from the date of purchase from 3Com or its authorized reseller. 3Com warrants the media containing software against failure during the warranty period. No updates are provided. 3Com's sole obligation under this express warranty shall be, at 3Com's option and expense, to refund the purchase price paid by Customer for any defective software product, or to replace any defective media with software which substantially conforms to applicable 3Com published specifications. Customer assumes responsibility for the selection of the appropriate applications program and associated reference materials. 3Com makes no warranty or representation that its software products will meet Customer's requirements or work in combination with any hardware or applications software products provided by third parties, that the operation of the software products will be uninterrupted or error free, or that all defects in the software products will be corrected. For any third party products listed in the 3Com software product documentation or specifications as being compatible, 3Com will make reasonable efforts to provide compatibility, except where the non-compatibility is caused by a "bug" or defect in the third party's product or from use of the software product not in accordance with 3Com's published specifications or user manual.

YEAR 2000 WARRANTY

In addition to the Hardware Warranty and Software Warranty stated above, 3Com warrants that each product sold or licensed to Customer on and after January 1, 1998 that is date sensitive will continue performing properly with regard to such date data on and after January 1, 2000, provided that all other products used by Customer in connection or combination with the 3Com product, including hardware, software, and firmware, accurately exchange date data with the 3Com product, with the exception of those products identified at 3Com's Web site, http://www.3com.com/products/yr2000.html, as not meeting this standard. If it appears that any product that is stated to meet this standard does not perform properly with regard to such date data on and after January 1, 2000, and Customer notifies 3Com before the later of April 1, 2000, or ninety (90) days after purchase of the product from 3Com or its authorized reseller, 3Com shall, at its option and expense, provide a software update which would effect the proper performance of such product, repair such product, deliver to Customer an equivalent product to replace such product, or if none of the foregoing is feasible, refund to Customer the purchase price paid for such product.

Any software update or replaced or repaired product will carry a Year 2000 Warranty for ninety (90) days after purchase or until April 1, 2000, whichever is later.

OBTAINING WARRANTY SERVICE

Customer must contact a 3Com Corporate Service Center or an Authorized 3Com Service Center within the applicable warranty period to obtain warranty service authorization. Dated proof of purchase from 3Com or its authorized reseller may be required. Products returned to 3Com's Corporate Service Center must be

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pre-authorized by 3Com with a Return Material Authorization (RMA) number marked on the outside of the package, and sent prepaid and packaged appropriately for safe shipment, and it is recommended that they be insured or sent by a method that provides for tracking of the package. The repaired or replaced item will be shipped to Customer, at 3Com's expense, not later than thirty (30) days after 3Com receives the defective product.

Dead- or Defective-on-Arrival. In the event a product completely fails to function or exhibits a defect in materials or workmanship within the first forty-eight (48) hours of installation but no later than thirty (30) days after the date of purchase, and this is verified by 3Com, it will be considered dead- or defective-on-arrival (DOA) and a replacement shall be provided by advance replacement. The replacement product will normally be shipped not later than three (3) business days after 3Com's verification of the DOA product, but may be delayed due to export or import procedures. When an advance replacement is provided and Customer fails to return the original product to 3Com within fifteen (15) days after shipment of the replacement, 3Com will charge Customer for the replacement product, at list price.

3Com shall not be responsible for any software, firmware, information, or memory data of Customer contained in, stored on, or integrated with any products returned to 3Com for repair, whether under warranty or not.

ADDITIONAL SERVICES:
Telephone Support. This OfficeConnect® product comes with telephone technical support for ninety (90) days. The ninety (90) day period begins on the date of Customer's product purchase.

The telephone technical support is available from 3Com from 9 a.m. to 5 p.m., local time, Monday through Friday, excluding local holidays. Telephone technical support is limited to the 3Com products designated above and may include assistance with installation, product specific configuration, and identification of equipment problems. Please refer to the Technical Support appendix in the User Guide for telephone numbers.

Response to requests for telephone technical support will be in the form of a return call from a 3Com representative by close of business the following business day.

To qualify for this 90 days of telephone technical support, you must register on the 3Com Web site at http://support.3Com.com/index.htm, and provide your date of purchase, product number, and serial number. 3Com reserves the right to modify or cancel this telephone support offering at any time, without advance notice. This offer is not available where prohibited or restricted by law.

3Com's Web and Bulletin Board Service are available at no charge, and provide software and firmware upgrades, a bug list, and technical information about 3Com products.

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IF A 3COM PRODUCT DOES NOT OPERATE AS WARRANTED ABOVE, CUSTOMER'S SOLE REMEDY FOR BREACH OF THAT WARRANTY SHALL BE REPAIR, REPLACEMENT, OR REFUND OF THE PURCHASE PRICE PAID, AT 3COM'S OPTION. TO THE FULL EXTENT ALLOWED BY LAW, THE FOREGOING WARRANTIES AND REMEDIES ARE EXCLUSIVE AND ARE IN LIEU OF ALL OTHER WARRANTIES, TERMS, OR CONDITIONS, EXPRESS OR IMPLIED, EITHER IN FACT OR BY OPERATION OF LAW, STATUTORY OR OTHERWISE, INCLUDING WARRANTIES, TERMS, OR CONDITIONS OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, SATISFACTORY QUALITY, CORRESPONDENCE WITH DESCRIPTION, AND NON-INFRINGEMENT, ALL OF WHICH ARE EXPRESSLY DISCLAIMED. 3COM NEITHER ASSUMES NOR AUTHORIZES ANY OTHER PERSON TO ASSUME FOR IT ANY OTHER LIABILITY IN CONNECTION WITH THE SALE, INSTALLATION, MAINTENANCE OR USE OF ITS PRODUCTS.

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DISCLAIMER

Some countries, states, or provinces do not allow the exclusion or limitation of implied warranties or the limitation of incidental or consequential damages for certain products supplied to consumers, or the limitation of liability for personal injury, so the above limitations and exclusions may be limited in their application to you. When the implied warranties are not allowed to be excluded in their entirety, they will be limited to the duration of the applicable written warranty. This warranty gives you specific legal rights which may vary depending on local law.

GOVERNING LAW

This Limited Warranty shall be governed by the laws of the State of California, U.S.A. excluding its conflicts of laws principles and excluding the United Nations Convention on Contracts for the International Sale of Goods.

3Com Corporation
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Santa Clara, CA 95054
(408) 326-5000

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ELECTROMAGNETIC COMPATIBILITY

FCC STATEMENT

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules, and the Canadian Department of Communications Equipment Standards entitled, "Digital Apparatus," ICES-003. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient the receiving antenna.
- Relocate the equipment with respect to the receiver.
- Move the equipment away from the receiver.
- Plug the equipment into a different outlet so that equipment and receiver are on different branch circuits.
- Consult the dealer or an experienced radio/television technician for help.

CSA STATEMENT

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

VCCI STATEMENT

この装置は、情報処理装置等電波障害自主規制協議会（ＶＣＣＩ）の基準に基づくクラスＢ情報技術装置です。この装置は、家庭環境で使用することを目的としていますが、この装置がラジオやテレビジョン受信機に近接して使用されると、受信障害を引き起こすことがあります。
取扱説明書に従って正しい取り扱いをして下さい。

BCIQ STATEMENT

警告使用者：這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策。

INFORMATION TO THE USER

The user may find the following booklet prepared by the Federal Communications Commission helpful:

How to Identify and Resolve Radio-TV Interference Problems

This booklet is available from the U.S. Government Printing Office, Washington, DC 20402, Stock No. 004-000-00345-4.

In order to meet FCC emissions limits, this equipment must be used only with cables which comply with IEEE 802.3.

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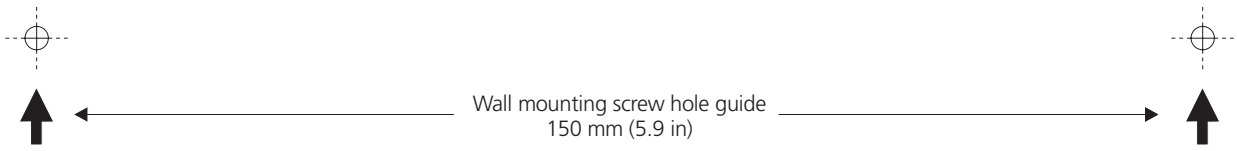

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